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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,015	07/14/2003	Eun-Sung Seo	9898-291	9260

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EXAMINER

VU, QUANG D

ART UNIT PAPER NUMBER

2811

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/620,015

Applicant(s)

SEO ET AL.

Examiner

Quang D Vu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
- 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
- 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,905,295 to Prall et al. in view of US Patent No. 6,355,968 to Lehmann et al.

Regarding claim 1, Prall et al. (figures 1A-B) teach a fuse bank of a semiconductor memory device comprising:

a first laser fuse (101) which includes a first laser fusing region which is disposed in a first direction; and

a second laser fuse (102) which includes a second laser fusing region which is disposed in the first direction,

wherein the first laser fuse (101) and the second laser fuse (102) are disposed adjacently with a space of a predetermined distance there between, the first laser fusing region (101) and the second laser fusing region (102) form a laser fusing region of the fuse bank, and the first laser fuse and the second laser fuse are disposed on a plane.

Prall et al. differ from the claimed invention by not showing a first connecting line region which is disposed to be bent in a second direction; a second connecting line region which is disposed to be bent in a third direction; a third connecting line region which is disposed to be

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bent in the second direction; and a fourth connecting line region which is disposed to be bent in the third direction. However, Lehmann et al. teach conductive lines pass on the same level of the fuses (column 2, lines 15-19). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Lehmann et al. into the device taught by Prall et al. because it provides interconnection in the fuse bank. The combined device shows a first connecting line region which is disposed to be bent in a second direction; a second connecting line region which is disposed to be bent in a third direction; a third connecting line region which is disposed to be bent in the second direction; and a fourth connecting line region which is disposed to be bent in the third direction.

Regarding claim 2, the combined device shows the laser fusing region has a parallelogram shape.

Regarding claim 3, the combined device shows the first direction is perpendicular to the second direction and the third direction.

Regarding claim 4, the combined device shows the second direction is opposite to the third direction.

Regarding claim 5, Prall et al. (figures 1A-B) teach a fuse bank of a semiconductor memory device comprising:

a first laser fuse group which has multiple laser fuses (101, 102, 103) arranged in a first direction with a space of a predetermined distance there between; and

a second laser fuse group that has multiple laser fuses (101', 102', 103') arranged in the first direction with a space of a predetermined distance there between,

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wherein the first laser fuse group (101, 102, 103) and the second laser fuse group (101', 102', 103') each include a laser fusing region which is disposed in the first direction, and the first laser fuse and the second laser fuse are adjacently disposed on a plane.

Prall et al. differ from the claimed invention by not showing a first connecting line region which is disposed to be bent in a second direction, and a second connecting line region which is disposed to be bent in a third direction. However, Lehmann et al. teach conductive lines pass on the same level of the fuses (column 2, lines 15-19). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Lehmann et al. into the device taught by Prall et al. because it provides interconnection in the fuse bank. The combined device shows a first connecting line region which is disposed to be bent in a second direction, and a second connecting line region which is disposed to be bent in a third direction.

Regarding claim 6, the combined device shows the laser fusing region has a parallelogram shape.

Regarding claim 7, the combined device shows the first direction is perpendicular to the second direction and the third direction.

Regarding claim 8, the combined device shows the second direction is opposite to the third direction.

Regarding claim 9, the combined device shows the first laser fuse group and the second laser fuse group are disposed repeatedly.

Regarding claim 10; Prall et al. (figures 1A-B) teach a fuse bank of a semiconductor memory device comprising:

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a first laser fuse group which has multiple laser fuses (101, 102, 103) arranged in a first direction with a space of a predetermined distance there between; and

a second laser fuse group that has multiple laser fuses (101', 102', 103') arranged in the first direction with a space of a predetermined distance there between,

wherein the first laser fuse group (101, 102, 103) and the second laser fuse group (101', 102', 103') each include a laser fusing region which is disposed in the first direction, the first laser fuse group (101, 102, 103) and the second laser fuse group (101', 102', 103') are disposed adjacently, the first laser fuse group and the second laser fuse group are disposed to be symmetrical about the direction perpendicular to the first direction, and the first laser fuse group (101, 102, 103) and the second laser fuse group (101', 102', 103') are disposed on a plane.

Prall et al. differ from the claimed invention by not showing a first connecting line region which is disposed to be bent in a second direction, and a second connecting line region which is disposed to be bent in a third direction. However, Lehmann et al. teach conductive lines pass on the same level of the fuses (column 2, lines 15-19). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Lehmann et al. into the device taught by Prall et al. because it provides interconnection in the fuse bank. The combined device shows a first connecting line region which is disposed to be bent in a second direction, and a second connecting line region which is disposed to be bent in a third direction.

Regarding claim 11, the combined device shows the laser fusing region has a parallelogram shape.

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Regarding claim 12, the combined device shows the first direction is perpendicular to the second direction and the third direction.

Regarding claim 13, the combined device shows the second direction is opposite to the third direction.

Regarding claim 14, the combined device shows the first laser fuse group and the second laser fuse group are disposed repeatedly.

Regarding claim 15, Prall et al. (figures 1A-B) teach a fuse bank, comprising:

a fuse region formed from a first fuse region (101) and a second fuse region (102) arranged parallel to each other, each with a first end and a second end.

Prall et al. differ from the claimed invention by not showing connecting lines connected to each of the first and second fuse regions, such that each of the first and second fuse regions has a connecting line on each end, wherein connecting lines on the first end are perpendicular to the first and second fuse regions in a first direction and connecting lines on the second end are perpendicular to the first and second fuse regions in a second direction. However, Lehmann et al. teach conductive lines pass on the same level of the fuses (column 2, lines 15-19). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Lehmann et al. into the device taught by Prall et al. because it provides interconnection in the fuse bank. The combined device shows connecting lines connected to each of the first and second fuse regions, such that each of the first and second fuse regions has a connecting line on each end, wherein connecting lines on the first end are perpendicular to the first and second fuse regions in a first direction and connecting lines on the second end are perpendicular to the first and second fuse regions in a second direction.

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Regarding claim 16, the combined device shows the first and second fuse regions being offset from each other a predetermined distance.

Regarding claim 17, the combined device shows connecting lines at each end of the fuse region being offset from each other a predetermined distance.

Regarding claim 18, Prall et al. (figures 1A-B) teach a fuse bank, comprising:

at least two fuses (a first group [101, 102, 103]; a second group [101', 102', 103']), each fuse comprising:

a plurality of fuse regions (101, 102, 103, 101', 102', 103'), each having a first end and a second end, arranged parallel to each other and offset from each other a predetermined distance.

Prall et al. differ from the claimed invention by not showing a plurality of connecting lines, one disposed at the first and second ends of each of the plurality of fuse regions, wherein the plurality of connecting lines are perpendicular to the plurality of fuse regions. However, Lehmann et al. teach conductive lines pass on the same level of the fuses (column 2, lines 15-19). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Lehmann et al. into the device taught by Prall et al. because it provides interconnection in the fuse bank. The combined device shows a plurality of connecting lines, one disposed at the first and second ends of each of the plurality of fuse regions, wherein the plurality of connecting lines are perpendicular to the plurality of fuse regions.

Regarding claim 19, the combined device shows the connecting lines disposed at the first end of a first fuse and a second fuse arranged in a first direction and the connecting lines disposed at the second end of the first fuse and the second fuse arranged in a second direction.

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Regarding claim 20, the combined device shows the connecting lines at the first end of a first fuse and the second end of a second fuse arranged in a first direction and the connecting lines at the second end of the first fuse and the first end of the second fuse arranged in a second direction.

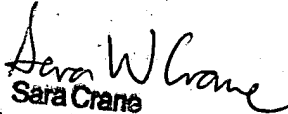
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang D Vu whose telephone number is 571-272-1667. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

qv
May 27, 2004


Sara Crane
Primary Examiner